

Bifurcation Tools for Flight Dynamics Analysis and Control System Design, Phase II

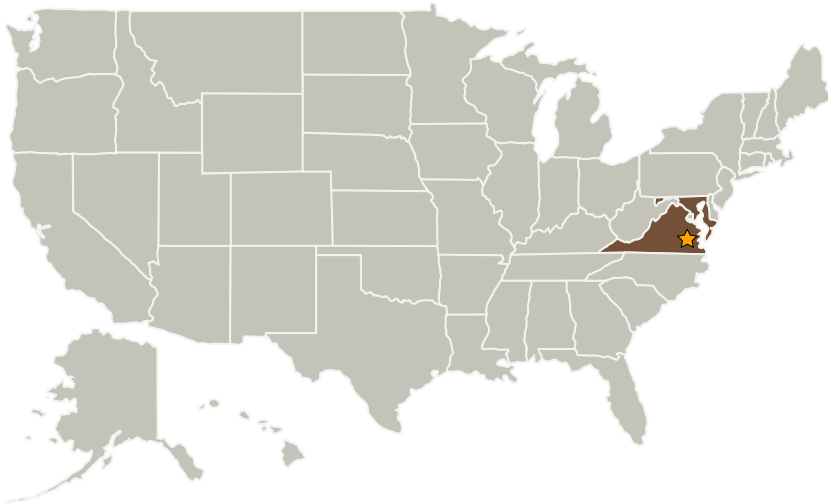
Completed Technology Project (2005 - 2007)



Project Introduction

The purpose of the project is the development of a computational package for bifurcation analysis and advanced flight control of aircraft. The development of relevant analytical and simulation-based technologies for the prediction and control for fail-safe adaptivity under adverse and upset conditions is an important step in advancing flight safety goals. Impaired aircraft operate much closer to bifurcation points than a fully functional vehicle. Thus, it is necessary to be able to evaluate aircraft and flight control system performance near stability boundaries. Understanding behavior near operational limits and developing control and recovery strategies for these circumstances is fundamental to achieving that goal. To that end TSi proposes an integrated set of computing tools involving symbolic, numerical and visualization environments. In phase I, the architecture was validated using a benchmark problem. Phase II proposes the extension of the results from Phase I into a commercial package to be made available to the analyst/designer of fault tolerant control algorithms.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Techno-Sciences, Inc.	Supporting Organization	Industry	Beltsville, Maryland



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Maryland

Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
 - └ TX15.1 Aerosciences
 - └ TX15.1.3 Aeroelasticity